

What is claimed is:

[Claim 1] We claim as our invention:

1. A golf club head comprising:

a body having a crown, a sole, and a hollow interior;

a face disposed on the body, the face comprising a heel vertical section, a toe vertical section, and a central horizontal section connected to each of the heel vertical section and toe vertical section, the face also comprising an upper central region, a lower central region, a heel region and a toe region, wherein the each of the heel vertical section, the toe vertical section and the central horizontal section has a first thickness, and each of the upper central region, the lower central region, the heel region and the toe region has a second thickness, and the first thickness is greater than the second thickness by at least 0.025 inch;

wherein the golf club head has a volume ranging from 385 centimeters to 475 centimeters and a mass ranging from 170 grams to 250 grams, a coefficient of restitution ranging from 0.82 to 0.875.

[Claim 2] 2. The golf club head according to claim 1 wherein the face further comprises a transition section which transitions from the first thickness to the second thickness.

[Claim 3] 3. The golf club head according to claim 1 wherein the first thickness is greater than the second thickness by at least 0.050 inch.

[Claim 4] 4. The golf club head according to claim 1 wherein the face is an insert attached to the body.

[Claim 5] 5. The golf club head according to claim 1 wherein the face is formed integral with the body.

- [Claim 6]** 6. The golf club head according to claim 1 wherein the body is an aft-body having an open front, and further comprising a face component attached to the open front of the aft-body, the face component including the face of the golf club head.
- [Claim 7]** 7. The golf club head according to claim 6 wherein the aft-body is composed of a non-metallic material.
- [Claim 8]** 8. The golf club head according to claim 4 wherein the body is composed of a non-metallic material.
- [Claim 9]** 9. The golf club head according to claim 1 wherein the body is composed of a cast titanium alloy material and the face is composed of a formed titanium alloy material.
- [Claim 10]** 10. The golf club head according to claim 1 wherein the golf club head has a moment of inertial I_{zz} about the Z-axis through the center of gravity of greater than $3000 \text{ g}\cdot\text{cm}^2$ and a moment of inertia I_{yy} about the Y-axis through the center of gravity in the range from $2000 \text{ g}\cdot\text{cm}^2$ to $4000 \text{ g}\cdot\text{cm}^2$.
- [Claim 11]** 11. The golf club head according to claim 5 wherein the face and body are cast together.
- [Claim 12]** 12. The golf club head according to claim 1 wherein each of the heel vertical section, the toe vertical section and the central horizontal section has a thickness ranging from 0.100 inch to 0.200 inch, and each of the upper central region, the lower central region, the heel region and the toe region has a thickness ranging from 0.030 inch to 0.090 inch.
- [Claim 13]** 13. The golf club head according to claim 1 wherein each of the heel vertical section, the toe vertical section and the central horizontal section has a thickness ranging from 0.125 inch to 0.165 inch, and each of the upper central region, the lower central region, the heel region and the toe region has a thickness ranging from 0.050 inch to 0.070 inch.
- [Claim 14]** 14. The golf club head according to claim 4 wherein each of the heel vertical section and the toe vertical section extends from a bottom the insert to a top of the insert.
- [Claim 15]** 15. The golf club head according to claim 1 wherein the heel vertical section, the toe vertical section and the central horizontal section form an H shape.

[Claim 16] 16. The golf club head according to claim 1 wherein the heel vertical section, the toe vertical section and the central horizontal section form a substantially X shape.

[Claim 17] 17. The golf club head according to claim 1 wherein an internal surface of the face is contoured to create a smooth surface.

[Claim 18] 18. The golf club head according to claim 14 wherein a top end and a bottom end of each of the heel vertical section and the toe vertical section have a width that is greater than a middle portion of each of the heel vertical section and the toe vertical section.

[Claim 19] 19. The golf club head according to claim 4 wherein the insert has a mass ranging from 25 grams to 40 grams.

[Claim 20] 20. The golf club head according to claim 19 wherein the insert has a height ranging from 1.80 inches to 2.50 inches, and a width ranging from 3.50 inches to 5.00 inches.

[Claim 21] 21. A wood-type golf club head comprising:

a body having a crown, a sole, a front wall and a ribbon, the front wall having an opening; and

a face insert attached to the body, the face insert having an exterior surface and an interior surface, the interior surface of the face insert comprising a heel vertical section, a toe vertical section, and a central horizontal section connected to each of the heel vertical section and the toe vertical section, the face also comprising an upper central region, a lower central region, a heel region and a toe region, wherein the each of the heel vertical section, the toe vertical section and the central horizontal section has a first thickness, and each of the upper central region, the lower central region, the heel region and the toe region has a second thickness, and the first thickness is greater than the second thickness by at least 0.025 inch;

wherein the golf club head has a volume ranging from 385 centimeters to 475 centimeters and a mass ranging from 170 grams to 250 grams, a coefficient of restitution ranging from 0.82 to 0.875.

- [Claim 22]** 22. The wood-type golf club head according to claim 21 wherein the body is composed of a material selected from the group consisting of magnesium, aluminum, polycarbonate, thermoplastic polyurethane, PBT (Polybutylene Terephthalate), blends of polycarbonate and polyurethane, carbon epoxy and plies of pre-preg.
- [Claim 23]** 23. The golf club head according to claim 21 wherein the face further comprises a transition section which transitions from the first thickness to the second thickness.
- [Claim 24]** 24. The golf club head according to claim 21 wherein the first thickness is greater than the second thickness by at least 0.050 inch.
- [Claim 25]** 25. The golf club head according to claim 21 wherein the body is composed of a cast titanium alloy material and the face insert is composed of a formed titanium alloy material.
- [Claim 26]** 26. The golf club head according to claim 21 wherein the golf club head has a moment of inertial I_{zz} about the Z-axis through the center of gravity of greater than 3000 g-cm² and a moment of inertia I_{yy} about the Y-axis through the center of gravity in the range from 2000 g-cm² to 4000 g-cm².
- [Claim 27]** 27. The golf club head according to claim 21 wherein each of the heel vertical section, the toe vertical section and the central horizontal section has a thickness ranging from 0.100 inch to 0.200 inch, and each of the upper central region, the lower central region, the heel region and the toe region has a thickness ranging from 0.030 inch to 0.090 inch.
- [Claim 28]** 28. The golf club head according to claim 21 wherein each of the heel vertical section, the toe vertical section and the central horizontal section has a thickness ranging from 0.125 inch to 0.165 inch, and each of the upper central region, the lower central region, the heel region and the toe region has a thickness ranging from 0.050 inch to 0.070 inch.
- [Claim 29]** 29. The golf club head according to claim 21 wherein each of the heel vertical section and the toe vertical section extends from a bottom the face insert to a top of the face insert.

[Claim 30] 30. The golf club head according to claim 21 wherein the heel vertical section, the toe vertical section and the central horizontal section form an H shape on the interior surface of the face insert.

[Claim 31] 31. The golf club head according to claim 21 wherein the heel vertical section, the toe vertical section and the central horizontal section form a substantially X shape on the interior surface of the face insert.

[Claim 32] 32. The golf club head according to claim 21 wherein the interior surface of the face is contoured to create a smooth surface.

[Claim 33] 33. The golf club head according to claim 29 wherein a top end and a bottom end of each of the heel vertical section and the toe vertical section have a width that is greater than a middle portion of each of the heel vertical section and the toe vertical section.

[Claim 34] 34. The golf club head according to claim 21 wherein the insert has a mass ranging from 25 grams to 40 grams.

[Claim 35] 35. The golf club head according to claim 21 wherein the insert has a height ranging from 1.80 inches to 2.50 inches, and a width ranging from 3.50 inches to 5.00 inches.

[Claim 36] 36. A golf club head comprising:

a face component having a return portion and a face insert;

an aft-body attached to the return portion of the face component;

wherein the face insert has an exterior surface and an interior surface, the interior surface of the face insert comprising a heel vertical section, a toe vertical section, and a central horizontal section connected to each of the heel vertical section and the toe vertical section, the face insert also comprising an upper central region, a lower central region, a heel region and a toe region,

wherein the each of the heel vertical section, the toe vertical section and the central horizontal section has a first thickness, and each of the upper central region, the lower central region, the heel region and the toe region has a second thickness, and the first thickness is greater than the second thickness by at least 0.025 inch;

wherein the golf club head has a volume ranging from 385 centimeters to 475 centimeters and a mass ranging from 170 grams to 250 grams, a coefficient of restitution ranging from 0.82 to 0.875.

[Claim 37] 37. The golf club head according to claim 36 wherein the aft-body is composed of a material selected from the group consisting of magnesium, aluminum, polycarbonate, thermoplastic polyurethane, PBT (Polybutylene Terephthalate), blends of polycarbonate and polyurethane, carbon epoxy and plies of pre-preg.

[Claim 38] 38. A golf club head comprising:

a body composed of a composite material having a front wall with an opening, a sole, a ribbon;

a crown plate attached to the body; and

a face insert disposed within the opening of the front wall, the face insert composed of a material having a density greater than the composite material, the face insert having an exterior surface and an interior surface, the interior surface of the face insert comprising a heel vertical section, a toe vertical section, and a central horizontal section connected to each of the heel vertical section and the toe vertical section, the face also comprising an upper central region, a lower central region, a heel region and a toe region, wherein the each of the heel vertical section, the toe vertical section and the central horizontal section has a first thickness, and each of the upper central region, the lower central region, the heel region and the toe region has a second thickness, and the first thickness is greater than the second thickness by at least 0.025 inch;

wherein the golf club head has a volume ranging from 385 centimeters to 475 centimeters and a mass ranging from 170 grams to 250 grams, a coefficient of restitution ranging from 0.82 to 0.875.